

that the response of dragonflies towards moving objects offers promising field for research in odonata behaviour.

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#### 18. FOOD PREFERENCES IN THE LARVAE OF TWO MOTHS: *SPODOPTERA LITURA* F. (FAM. NOCTUIDAE) AND *DIACRISIA OBLIQUA* WALK. (FAM. ARCTIIDAE)

(With a text-figure)

The larvae of the moths *Spodoptera litura* and *Diacrisia obliqua* are serious pests of cruciferous plants in Saharanpur (U.P.) and are responsible for considerable damage. The larvae of the former (*S. litura*) hatch out in early September, and have an average larval period of about ten days completed in five moults and mainly feed upon cauliflower leaves of the early crop. The larvae of the latter (*D. obliqua*) hatch out in late October, and have an average larval period of about thirty eight days completed in six moults and are mainly pests on raddish leaves. In the light of thermal constant derived by Muggeridge (1942)<sup>1</sup> in regard to the development of *Pieris rapae*, difference between the duration of their larval periods—10 days in the former and 38 days in the latter—is perhaps accountable since the normal room temperature recorded in early September was around 30°C as against 20°-18°C in late October.

With a view to determine the extent of food preference in the larvae of the two moths (*S. litura* and *D. obliqua*) their comparative rate of feeding during the entire larval period was studied on their usual food (cauliflower leaves in the case of *S. litura* and raddish

<sup>1</sup> MUGGERIDGE, J. (1942): The White Butterfly (*Pieris rapae* L.): Its establishment, spread and control in New Zeland. *N. Z. J. Sci. & Tech.* 24(3).

leaves in case of *D. obliqua*) as well as unusual food (raddish leaves in case of *S. litura* and cauliflower in case of *D. obliqua*), as indicated by the faecal matter produced by them in 24 hours.

*S. litura* lays eggs in early September on the underside of the leaves of cauliflower plants, usually of those situated on the periphery of the fields. *D. obliqua* lays eggs from late October to early December on the underside of the leaves of raddish plants. The leaves of the host plants with the corresponding eggs on them were taken to the laboratory. Eggs were reared in glass-chimneys and were observed every eight hours for hatching.

Of the freshly hatched larvae, twelve in each case were placed in a large petri-dish covered over by a rearing glass-chimney and fed on leaves (of cauliflower or raddish, as per the requisite of the experiment), which were replaced by fresh ones every day, between 10.00 and 11.00 a.m. During the same period every day, the faecal matter accumulated in the petri-dish during the past 24 hours was collected by means of a fine camel hair brush. The faecal matter was then weighed as such, as well as after drying it in oven for 24 hours at 100°C, with a view to obtain comparative rate of feeding of the larvae of the two moths on their usual and unusual foods during their entire larval periods, till they stopped feeding preparatory to pupation.

## RESULTS

The comparative amounts of faecal matter (wet without drying) produced by twelve larvae each of *S. litura* and *D. obliqua*, during their entire larval period are shown in Fig. 1. These results may be interpreted to suggest the following:—

1. The larvae of *S. litura* have preference for cauliflower leaves for their food as indicated by the fact that twelve of them produce 19.8 gm of faecal matter (wet) when fed on cauliflower leaves (their usual food) but produce only 13.2 gm of it when fed on raddish leaves (not their usual food).
2. The larvae of *D. obliqua* on the other hand, do not have any appreciable preference for any one of them since they produce 18.8 gm of faecal matter when fed on raddish leaves (their usual food) as against 18.4 gm when fed on cauliflower leaves (not their usual food).
3. Although the larval period in *S. litura* is completed in 10 days and in *D. obliqua* in 38-39 days, the total amount of faecal matter produced is not much different indicating thereby that the damage done in a day by the larvae of the former is nearly four times of that done by the larvae of the latter.
4. The shorter larval period in *S. litura* is perhaps due to a higher

temperature (room temp. about 30°C) during September and the consequent higher metabolic activity, as also co-related by their higher food intake. Evidently it is on this account that the early cauliflower crops are prone to a much higher damage than the later crops when temperature is lower.



Fig. 1.—Comparative amount of faecal matter (wet, without oven—drying; in gm) passed by 12 larvae each of *S. litura* and *D. obliqua* during their entire larval periods extending over 10 days (5 moults) in the former and 38-39 days (6 moults) in the latter. A—While feeding on their usual food (cauliflower leaves for *S. litura* and raddish leaves for *D. obliqua*); B—while feeding on their unusual food (raddish leaves for *S. litura* and cauliflower leaves for *D. obliqua*).

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